CLAIMS

What is claimed is:

1. A multiport repeater (MR) for fast Ethernet (100Mbps) data transmissions, whose inter-repeater backplane interface signals comprise: an inter-repeater data and control bus, a backplane request bus, and a collision detection control signal; the backplane request bus including a request output signal and at least one request input signal for implementing a stack backplane with MR stack units and the connection of the MR arbitration repeater stack units being such that:

> the request input signal detects in parallel whether any repeater stack unit makes a request, obtains an inter-repeater bus signal and sends out the request input signal;

> once the inter-repeater bus signal is obtained, the repeater stack unit making the request starts to receive emerging data; and

> any of the request input signals also detects request actions at the same time, returning the request from each of the repeater stack units for the inter-repeater bus, and when a backplane collision occurs the rest of the repeater stack units detect the occurrence of the collision through the backplane collision bus.

2. The multiport repeater of claim 1 providing a local extension port for serially connecting devices on a panel and a backplane extension port for serially connecting a stack panel for stacking backplanes.

3. The multiport repeater of claim 2, wherein the local extension port provides a request output signal for the inter-repeater bus to use, at least one request input signal from other local serial devices, and an open-collection two-way pin for collision propagation; an arbitration method produces a bus writeable signal when there is only a self-request signal; and a collision signal is provided to its internal circuit when more than one request signal

13

exists.

4.   The multiport repeater of claim 2, wherein the backplane extension port provides a backplane request output signal for the inter-repeater bus to use and at least one backplane request input signal for other backplane stack panels; the arbitration method OR all local device requests and produces a bus writeable signal; and its internal circuit generates an incompatible signal of collisions when more than one backplane request exists and the local detection incompatibility/collision state is propagated to the backplane extension port so that the backplane device forms a signal collision area.

5.   The multiport repeater of claim 1 providing each port a pin for connection/action LED display and each port a pin for error state LED display, and a pin for integrity display of the collision state.